

International Effects of the Andersen Accounting and Auditing Scandals: Some Evidence from the US, UK and Australian Stock Markets

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Abstract

In this paper, we use event study methodology to examine the effect of two highly publicized accounting failures, at Enron and WorldCom both audited by Arthur Andersen, on the total stock returns of some companies in the UK also audited by Arthur Andersen. The results vary substantially between countries. We find no evidence of a significant impact in the UK or US. There is some evidence of negative abnormal returns at the time of the Enron scandal in Australia. However, this reaction was very short-lived and the negative abnormal returns on the stocks of Andersen-audited companies had been fully recovered within a week. Our results suggest that sharing an auditor with a firm that has issued corrections to accounts which have previously received an unqualified audit opinion does not significantly affect market perceptions of firms' value, which suggests that the choice of auditor has little, if any, impact on market perceptions of the reliability of published financial information.

Key words: Accounting scandals, Enron, WorldCom, Event study, International Stock Markets.

1. Introduction

This paper examines the reactions of investors in different countries to apparent failures in the audit process or, more specifically, the changes in investors' valuations of the shares of other companies audited by the firm allegedly at fault. Two cases will be examined in this paper in order to arrive at some tentative conclusions, in the hope that these will be further evaluated and expanded by the examination of a wider range of similar cases. The intention is to examine the international effects of these scandals, both of which involved US companies, in order to determine whether there were any differences between the reactions of investors in US companies and those of investors in companies elsewhere.

The two cases selected for this study are both well-known accounting scandals at US clients of the international firm Arthur Andersen, namely Enron and WorldCom. Investor reactions will be studied by examining the behaviour of the prices of large UK companies whose accounts were also audited by Arthur Andersen. By examining the effects of events in the US on markets in the US, UK and Australia, it will be possible to form a judgment on the effects of audit failures on the reputation of firms internationally.

Auditor reputation and branding is a widely recognized concept (Simunic and Stein 1987, Beatty 1989, Lee 1996, Mayhew 2001). The international aspect is important in assessing the extent to which the names of international accounting firms are worldwide brands. On the one hand, prior to Arthur Andersen's disappearance as an independent firm, the remaining partners repeatedly insisted that it was unfair that their reputation should be damaged by the actions of partners and staff in other offices. In other words, they were seeking to dispel the perception that Arthur Andersen was a worldwide brand. On the other hand, it might easily be said that the partners in any international audit firm can always be regarded as trading on the reputation built up by other partners in other parts of the world, with or without having personally contributed to the firm's standing, in order to market their own services. In other

words, there should be a general expectation that a worldwide brand does exist, for better or worse.

In this paper, we are concerned with the US, UK and Australian market reactions to the Enron and WorldCom scandals. We investigate if there are any negative effects on three separate groups of companies audited by Arthur Andersen: the 8 firms in the FTSE 100 index audited by Andersen; 8 US firms audited by Andersen and included in the S & P 500 index; and 8 Andersen-audited companies included in the Australian Stock Exchange's ASX 100 index.

The rest of the paper is organized as follows. In Section 2, we review the background of the events and the prior literature. In Section 3, we introduce the methodology, i.e. the event study applied to our particular setting. The data used for the study are described in Section 4. In Section 5, we present the empirical results. Further discussion and analysis are presented in Section 6. Finally, we conclude in Section 7.

2. Background and prior literature

2.1. The Enron event

The details of the Enron scandal have been often enough described (Callen and Morel, 2002, Asthana *et al.* 2003) to make it unnecessary to provide more than a basic outline here. Enron was and still is an energy company based in Houston, Texas that deals with the energy trade on an international and domestic basis. It was formed in 1985 when Houston Natural Gas merged with InterNorth. After several years of international and domestic expansion involving complicated deals and contracts, Enron was billions of dollars into debt. All of this debt was concealed from shareholders through partnerships with other companies, fraudulent accounting, and illegal loans.

At the heart of the Enron scandal was a group of exceptionally ambitious executives seeking to create a new kind of Energy Company. At its peak, Enron reported annual revenues of \$100 billion and employed over 20,000 employees. Fortune ranked the company as high as seventh on its "Fortune 500" list. We now know, however, that this edifice was an intricate house of cards built on a foundation of sham transactions and accounting manipulations.

When the frauds surfaced during the fall of 2001, the structure quickly collapsed, leaving investors, employees, and customers with billions of dollars in losses. How could a company that was the poster child for innovation and entrepreneurial success fall so far so fast? How could so many people have been deceived?

It turns out that Enron was not unique. Since its fall, revelations of accounting impropriety and insider corruption at WorldCom, Tyco, Adelphia, and other companies continue to come to light. Major corporations are issuing earnings restatements at a higher rate than ever before, including 270 in 2001 alone.

Enron and other recent scandals reveal astonishing - perhaps unprecedented - levels of executive greed and dishonesty, but there is more to the story than that. Certain features of the current business and legal environment encourage management to raise share prices by any available means. Executive compensation practices heavily rely on stock options, giving top management a direct and immediate stake in price increases. In addition, the still real threat of hostile takeovers creates a powerful incentive on the part of corporate management to boost stock prices in order to placate investors and discourage potential hostile bidders by raising acquisition costs. This culture of shareholder value maximization-currently interpreted to require short-term share price maximization-rewards efforts to boost share price whether or not the means are lawful. How corporate law might address this problem is certainly a question of great urgency.

As a result, Enron was forced to file for bankruptcy in December 2001. The investigation into the extent of the fraud committed by Enron is still ongoing, although the Chief Financial Officer, Andrew Fastow pleaded guilty to charges of conspiring to inflate profits and conceal debts in January 2004.

2.2. The WorldCom Event

The accounting problems at WorldCom were quite different from those at Enron, except for two factors. Both companies had exaggerated earnings figures and both companies were audited by Arthur Andersen.

It might be said that if Enron collapsed because there was too little substance behind the big business façade, WorldCom's problems stemmed from the fact that there was a bit too much – especially in terms of service capacity.

WorldCom, now trading as MCI, is a major provider of internet communications services. According to the company's own figures (MCI, 2003), it can claim over 20 million customers in 140 countries and employs 55,000 people.

Founded in 1968, in the early days of internet technology, the company grew rapidly during the 1990s internet boom. However, by 1999, the company had started to run up excess capacity and was beginning to suffer financially due to the lack of demand. WorldCom was vulnerable to the downturn in demand because of its contractual agreements to pay line rentals to other network providers in return for access. By the year 2000, the obligation to pay for the right to use cables that the company did not need was becoming a problem. However, the company, under its flamboyant chief executive, Bernie Ebbers, used aggressive earnings management techniques to conceal the scale of the problem.

According to the complaint filed by the US Securities and Exchange Commission (Securities and Exchange Commission 2002), the company inflated its net earnings in two ways, capitalization of line rental costs and fraudulent use of reserves.

For the year ended December 31st, 2000, according to the SEC, WorldCom reduced its reported expenditure and inflated its earnings by \$1.235 billion by reducing balance sheet reserves without taking the amounts through the profit and loss account. A small amount of expenditure was similarly written off against reserves in the following year.

In June 2002, WorldCom revealed that it had wrongly capitalized \$3.85 billion of current expenditure over the period from January 1st, 2001 to March 31st, 2002. The expenditure consisted of line costs.

The combined effects of these reductions in reported expenditure were to inflate net earnings for the year 2000 from \$6.333 billion to \$7.568 billion. For the year 2001, a profit of \$2.393 billion was reported. According to the SEC, the company had in fact made a loss of \$622 million. In the first quarter of 2001, the company reported a profit of \$240 million instead of a loss of \$578 million. As the company continued to reconsider its books in subsequent months, the probable overstatements of earnings eventually raised to over \$9 billion – at least enough to wipe out any reported earnings since the start of the year 2000. On top of that, the company was to write off \$80 billion in assets, including \$45 billion of goodwill in acquired companies in the year 2003 – assets which had been on the company's books during the years 2001 and 2002, suggesting that the true level of losses had been even bigger than the company had admitted.

The company had now moved on from overstating profits to concealing increasing losses. On July 21st, 2002, the company filed for protective bankruptcy, allowing the company to continue trading in the interests of its creditors. Subsequently, on May 21st, 2003, the

company agreed to settle the case brought by the SEC on behalf of investors with a payment of \$500 million.

Six WorldCom employees, including the Chief Executive, Bernie Ebbers, and Chief Financial Officer, Scott Sullivan, were subsequently convicted of fraud and other charges in relation to the company and its filings. The auditors, Arthur Andersen, claimed that they had failed to spot the scandal because executives had concealed information from them.

A great deal of attention has been focused, both in the academic literature and in the press, on the impact of the Enron scandal on the stock market, popular attitudes to business and the reputation of the audit profession. Although WorldCom and other scandals have by no means passed without comment, the attention devoted to this much bigger corporate collapse has perhaps not been proportionate to the scale of the sums of money involved. It may also be fair to say that the implications of the WorldCom scandal for Arthur Andersen were much deeper than those of Enron. Enron at the time might have been seen as a one-off, a single major accounting scandal which the company's directors had gone to some lengths to conceal from the auditor. By the time of the WorldCom scandal, Andersen were already trying to cope with the reputation damage caused by the Tyco and Global Crossing scandals, as well as smaller audit failures at Qwest and Arizona Baptist Foundation. There was therefore far more focus on the role of the auditor in a series of failures of accountability with which the firm was associated and which were becoming too numerous to be written off as just a run of bad luck. In these circumstances, it might be predicted that each new scandal would further shake the confidence of investors in any set of financial figures backed up by an audit opinion bearing Arthur Andersen's signature.

A further factor is the extent to which the accounting problems could have been detected by normal audit procedures. The Enron case involved complex accounting methods and entities with unusual legal structures, partly intended to confuse internal and external users of

financial information and likely to deter an auditor working under normal time pressure from making a thorough investigation. The auditor may have been perceived to be less at fault than the directors. At WorldCom, however, there were fairly transparent issues of asset valuation, which could have been expected to attract the auditor's attention and the threat of a qualified opinion. There were good reasons for interested observers to place at least as much blame on the auditors as on the company's directors. For this reason, WorldCom may have been seen as being a far worse reflection on Arthur Andersen's judgment than Enron.

2.3. Prior literature

The Andersen indictment was the first ever criminal indictment of one of the big auditors and hence a unique event where the auditor's reputation was clearly tarnished. It thus provides a clean laboratory to test the impact of auditor reputation and audit quality on firm value (Krishnamurthy et al, 2002). Chaney and Philipich (2002) investigate the impact on stock prices of various event dates related to the Enron-Andersen case. They found that the firms in the US audited by Andersen experienced a negative market reaction around the date Andersen admitted to shredding documents related to the Enron audit on January 10, 2002, and the reaction was more severe for clients of Andersen's Houston office and for firms with high prior sales growth.

In another recent paper on the stock market reaction to Andersen's clients in the US by Krishnamurthy, Zhou and Zhou (2002), it is concluded that when news about Andersen's indictment was released on March 14, 2002, the market reacted more negatively to Andersen clients than to clients of the other Big Four auditors in the US. They also found that the indictment period abnormal return is significantly higher when auditor independence is perceived to be high, i.e. the auditor firm provides fewer non-audit related services to the client.

However, to the authors' best knowledge, there is no paper examining the international effects of the Andersen accounting and auditing scandals. This paper aims to fill this gap by assessing the market reactions to the Enron and WorldCom scandals in two other countries with similar financial systems to the US, namely the UK and Australia. We investigate if there are any negative effects on the firms in the FTSE 100 and ASX 100 indices audited by Andersen.

3. Methodology

The event study has been widely used in finance. Using financial market data, an event study measures the impact of a specific event on the value of a firm. Thus given our research purpose, it appears that the event study is the most appropriate technique to use.

Event studies have a long history (MacKinlay, 1997). Two seminal studies in the 1960s are worth mentioning: Ball and Brown (1968) and Fama et al. (1969) introduced the methodology that is essentially the same as that which is in use today. Ball and Brown (1968) considered the information content of earnings, and Fama et al. studied the effects of stock splits after removing the effects of simultaneous dividend increases.

Here we employ the event study methodology to investigate the auditor effect on the stock return. To this end, we are interested in finding out the unexpected return that results from an auditor scandal announcement such as the ones related to Enron and WorldCom scandals. The price reaction to the events is examined by applying the standard event study methodology as described in Brown and Warner (1985). Market-and-risk adjusted simple daily returns are calculated as follows:

$$AR_{i,t} = R_{i,t} - (\hat{\alpha}_i + \hat{\beta}_i R_{m,t}) \quad (1)$$

where $AR_{i,t}$ is the abnormal return for firm i at day t , $R_{i,t}$ denotes the return for firm i at day t , $R_{m,t}$ is the return for the market index at day t , and $\hat{\alpha}_i$ and $\hat{\beta}_i$ are OLS estimates from the market model regression.

The general strategy in event studies is to estimate the abnormal return around the date the new information about a stock is released to the market and attribute the abnormal performance to the new information.

In practice, the calculation is split into two steps. First of all, the coefficients $\hat{\alpha}_i$ and $\hat{\beta}_i$ for firm i in (1) are obtained by using share price data over the so-called estimation window, which is a period prior to the event date. Then the abnormal returns for firm i can be calculated over the event window, which is a period around the event date. It is typical for the estimation window and the event window not to overlap. This design provides estimators for the parameters of the normal return model which are not influenced by the returns around the event. Including the event window in the estimation of the normal window parameters could lead to the event returns having a large influence on the normal return measure. In this situation, both the normal returns and the abnormal returns would capture the event impact.

To determine the statistical significance of the daily abnormal returns, we use the t-test recommended by Brown and Warner (1985) in the presence of event clustering to take into account cross-sectional correlation. Though other tests such as the nonparametric Wilcoxon signed test are available, we carry out only one test for the sake of simplicity.

One concern that complicates event studies arises from leakage of information in which the stock prices might start to increase or decrease days or weeks before the actual announcement date. Any abnormal return on the announcement date is then a poor indicator of the total impact of the information release. For this reason, it is better to use cumulative abnormal return (CAR), which is simply the sum of all abnormal returns over the time period of

interest. The CAR thus captures the total firm specific stock movements for an entire period when the market might be responding to new information.

4. The Sample Data

This paper focuses on two significant events which have many similarities. The November 8, 2001 was chosen as the event date for the Enron case. Although this was by no means the first date on which adverse information about Enron's accounting practices and the quality of its financial statement figures became known to stock market participants, this was the date on which the company published concrete figures for the corrections needed to the accounts for the years 1996 to 2000, reducing earnings by a total of \$586m. Before this date, the markets were already aware of the SEC's investigation into Enron's relationship with the special purpose vehicles and of the Andrew Fastow's departure from his post as chief financial officer. However, the announcement on November 8 can be seen as the first formal admission by the company of any malpractice by any of its officers and the first admission of errors affecting the financial statements.

Daily closing stock prices from the London Stock Exchange were obtained for the entire period from October 11, 2000 to December 6, 2001 from Yahoo! Finance for three groups of 8 companies in different companies. All prices were pre-adjusted for dividends, share splits and consolidations, so that no further information was needed to calculate total shareholder returns. The three groups of companies were:

1. A group of 8 US companies within the S & P 500 audited by Arthur Andersen for financial years ending in 2001 (Table 1). These companies were chosen from a range of different industries. Closing prices are quoted in US Dollars. According to information contained in companies' annual reports and Edgar filings, a total of 28 US companies presently included in the S & P 500 were audited by Arthur Andersen for financial years ending in 2001 and 2002. However, a number of these companies

were affected by unusual factors. For example, Omnicom's shares fell by 19.7% on June 13th 2002 (within the WorldCom event window), following a report in the Wall Street Journal (O'Connell and Eisinger 2002, Kirchgaessner and Grimes 2002) that they too had engaged in dubious accounting practices, by failing fully to account for liabilities arising on acquisition, while Allied Waste Industries dismissed Andersen as auditors on June 20, 2002. Shares in another Andersen-audited company, Wyeth, were affected by a separate issue involving the safety of their drugs in early July 2002 (Griffith and Bowein 2002). These companies have not been included in the US sample.

2. All companies included in the FTSE 100 index which was audited by Arthur Andersen for financial years ending between January 1 and December 31, 2001 (Table 2). The closing prices used were quoted in GB Pounds. 8 companies within the FTSE 100 were audited by Arthur Andersen during this period.
3. All companies included in the Australian Stock Exchange's ASX 100 index which were audited by Arthur Andersen for financial years ending in 2001 (Table 1). The closing prices used were quoted in Australian Dollars. 10 companies within the ASX 100 were audited by Arthur Andersen during this period. However, these companies represent 11 components of the ASX 100, as two classes of News Corporation shares were included separately in the index. We have excluded News Corp's non-voting shares, because their price movements can be expected to be closely correlated with their "B" voting shares, and because non-voting shares form a different class of shares from those included in the UK and US samples. We have also excluded two other companies, OneSteel and Alinta, which obtained their first Australian Stock Exchange listing in October 2000, because of the possible effects of unusual changes in the share price in the period immediately after first listing on the alpha and beta values used in calculating expected returns.

[Insert Tables 1, 2 and 3 about here]

The event window for the Enron scandal is the period from October 25 to November 22, 2001, covering 10 working days either side of the event date. The estimation window is the period from one year prior to the event window. Normal returns were estimated for each firm on the basis of a market model, using the relevant market index as the market portfolio proxy to measure market returns. For UK companies, the FTSE 100 was used, for US companies, the S & P 500 and for Australian companies the ASX 100.

For WorldCom, the event date selected was June 25, 2002. However, due to time zone differences, the actual event date used for UK and Australia are slightly different from this date. 25 June 2002, was the date on which the company announced that an internal audit investigation had found that the company had not properly accounted for \$3.8 billion in expenses and that cumulative profits had been overstated by that amount. This, again, was by no means the first date on which the markets became aware of adverse information concerning possible problems at WorldCom's accounting practices, although in this case, in contrast to Enron, this initial restatement was the beginning, rather than the end, of the story as far as accounting corrections were concerned. Once again, the event date selected is the date on which the company first formally admitted that its financial statements for previous years had been inaccurate, reflecting adversely on the performance of both the Chief Financial Officer, Scott Sullivan, and the auditors, Arthur Andersen.

The event window for the WorldCom scandal is the period from June 13, 2002 to July 11, 2002 and the estimation window is again one year prior the event window. The source of information, the sample of companies selected and the market returns model used to estimate normal returns are the same as for the Enron scandal.

The following results provide some general indications of the attitudes of investors to companies which share an auditor with firms which have admitted to accounting problems. However, these results should be considered in the light of certain limitations.

Firstly, as MacKinlay (1997) observes, it is often extremely difficult in event studies to identify the most significant event date. This is especially true in the case of financial irregularities. By their very nature, financial irregularities are initially known to only a few individuals. Subsequently and for obvious reasons, news of irregularities is not disseminated to the markets through the official and public channels which good stock market practice demands. The fact first becomes a rumour, then the rumour becomes an allegation, later the allegation gives rise to an investigation and finally, often many years later, the investigation produces official findings. The amount of information available to each stock market participant and the amount of that information that each person believes at any given moment is highly variable and unknowable. We have selected the dates on which actual earnings corrections were announced. However, in both cases, official investigations were already underway and there was a probability, difficult to assess, that some previously published financial figures could be restated and financial irregularities discovered.

Secondly, there is a distinction between events which reflect on the competence of the auditors and events which reflect on their honesty. Chaney and Philipich (2002), for example, found that the negative effects on Andersen-audited firms' valuations of the announcement of corrections to Enron's accounts were short-lived and insignificant, whereas the effects of the Andersen's admission that it had shredded audit documentation were significant and sustained over time.

Thirdly, we have only examined a small number of companies in this study. As a foreign firm and one of the smaller Big 5 firms, Arthur Andersen had a relatively small share of the UK and Australian audit markets. We hope that further studies will allow our conclusions to be

strengthened by examining the effects of overseas audit failures on a larger number of companies.

We also note the possible effects of the attack on the World Trade Centre on September 11, 2001 on returns during the two estimation windows and the event window for Enron.

However, the use of the market model is intended to isolate the effects of the two accounting scandals from the effects of this and other contemporaneous events.

A search of newspaper archives, including the Wall Street Journal, Financial Times, Times and Guardian was made for significant events concerning the companies in the sample.

However, except as noted below, no significant events were found at the time of the two event windows.

5. The empirical results

The results of the event study for the three samples of Andersen auditees for the announcement dates of Enron and WorldCom are presented in Tables 4 to 6 and Figures 1 to 3.

5.1. US Companies

Table 2 and Figure 1 show the results for the US companies. The abnormal returns for the Enron event were positive, while the abnormal returns for the World Com event are negative. None of the on-day or multi-day abnormal returns for the Enron event window are significant and the overall cumulative returns for WorldCom are also insignificant. A search of broadsheet newspaper archives, using ProQuest journal database and including the Wall Street Journal, Financial Times, Times and Guardian newspapers found no news items of relevance to the companies included in the sample which would have explained the abnormal movements in their share prices.

However, in relation to the WorldCom event, the negative abnormal returns on Day +4 (July 2, 2002) were significant at the 10% level, with all 8 companies having negative abnormal returns. This was followed by further falls on Day +5, although this was less dramatic. On Day +10 (July 11), the negative returns were significant at the 5% level. These findings are not significant overall, because the effects do not exactly coincide with the announcement of accounting errors at WorldCom and because of the small number of days with significant results (only 2 out of 21, even at the 10% level, which is in line with expectations from a random distribution). However, it is noteworthy that over the entire event window, US Andersen-audited stocks exhibited negative abnormal returns of 4.8%, in contrast to the positive returns during the Enron event window. It therefore appears that the US market reacted more negatively to Andersen's involvement in WorldCom than to their implication in Enron.

[Insert Table 2 about here]

[Insert Figure 1 about here]

5.2. UK Companies

Table 3 reports abnormal returns in the event window [-10, +10] around the announcement dates of the Enron and WorldCom scandals for the UK companies. The results are similar to the US but the abnormal returns are not significant in either case. This implies that Andersen audited firms were not significantly impacted overall. Moreover, the market did not foresee the Enron event. It also appeared that the market responded slowly to the Enron scandal. Either market participants were not convinced that Andersen's auditing practices were generally unsatisfactory or they did not treat the assurance provided by auditors' opinions on company accounts as a significant factor in company valuation. Our findings regarding the Enron event are consistent with the one by Chaney and Philipich (2002) who do not find any

statistically significant cumulative abnormal returns for Andersen clients in the US as a result of Enron's announcement on November 8, 2004.

[Insert Table 3 about here]

[Insert Figure 2 about here]

However, with the event of the WorldCom scandal, the market reaction was slightly different. There are still no significant abnormal returns on any single day close to the announcement date. However, the abnormal returns around this date are generally negative, in contrast to those in the Enron event window, which are positive. This implies that firms audited by Andersen may have been penalized more for their auditors' association with WorldCom than for the connection with Enron. These observations can be further confirmed by considering the cumulative returns, which are presented in Figure 2. The abnormal returns associated with the Enron announcement were slightly negative in the lead-up to the announcement and slightly positive thereafter. However, in the WorldCom scandal, the prices of shares in Andersen-audited companies began to fall, relative to the index, well in advance of the announcement, fell sharply around the time of the announcement itself and continued to fall as time went on, before settling at a lower level around 8 days after the event date.

5.3. Australian Companies

The Australian data, however, shown in Table 4 and Figure 3, tell a rather different story. Once again, the cumulative abnormal returns over 20 days are positive for the Enron event and negative for WorldCom. This time, however, there are no significant one-day or multi-day gains or losses in the case of WorldCom. The only highly significant movement is the abnormal loss on second day after the Enron disclosures. Notwithstanding this, the abnormal return for the entire event period is positive for Enron. The Australian stock market reacted negatively to Andersen's auditees in the very short term in the immediate aftermath of the Enron announcement but quickly recovered. The losses were also concentrated within a very

short period of time. A search of the Australian Stock Exchange News Service, companies' own websites and newspaper archives did not reveal any significant news releases which would explain this pattern independently. News Corporation announced a fall in quarterly profits on November 7 (Gow 2001), leading to negative abnormal returns of 3.49% for November 8. However, this merely reversed a 3.53% abnormal gain the previous day and appears to be fully explained by the reversal of speculative gains ahead of the announcement. On November 12 (Day +12), News Corporation showed abnormal losses of 1.14% - less than the sample average – and therefore the significant results for this day cannot be explained by News Corporation's performance. No other significant events affecting companies in the sample were found. It is therefore highly probable that the announcement of accounting corrections at Enron had an effect – in the very short term – on the prices of other companies with the same auditor in Australia, while leaving shares in US (and UK) companies largely unaffected.

[Insert Table 4 about here]

[Insert Figure 3 about here]

6. Discussion and analysis

Cumulative abnormal returns for Andersen-audited companies for the 20 day period surrounding the WorldCom announcement were negative in all three countries. By contrast, cumulative abnormal returns for the same stocks in the 20-day period surrounding the Enron announcement were actually positive.

The Enron and WorldCom scandals involved US companies. None of the major UK or Australian companies audited by Arthur Andersen were implicated in the series of accounting failures that led to the demise of Arthur Andersen as a firm. However, Australian-listed shares showed a significant but very short-term negative reaction to the Enron scandal which is not seen elsewhere.

The reaction to the Enron scandal in Australia was markedly different to the reaction in the US and UK, in that stocks in Australian companies audited by Arthur Andersen fell sharply when the accounting problems at Enron were announced but recovered within a week, whereas the US and UK markets showed little, if any reaction to the news. The effect was very similar over a longer time period but reaction in Australia was far more volatile.

This reaction is difficult to explain. However, it is noteworthy that the three Australian companies with the most negative abnormal returns on November 12 (Enron Day +2) were the pharmaceutical companies Sigma-Aldrich (-6%), and CSL (-4%) and the software company Computershare (-5%). These companies are all in sectors which are heavily reliant on the quality of intellectual property, the valuation of which is highly sensitive to earnings, as, unlike most tangible assets, it lacks value outside the business. This pattern was to some extent replicated in the UK, where Shire Pharma exhibited a negative abnormal return of 4% on November 9 (Enron Day +1), whereas none of the other UK shares suffered abnormal returns in excess of 1%. It should be noted that the time zone differences mean that reactions in Australia are likely to lag behind the UK by one day, as Australian markets are closed before UK markets open. No similar effects were observed in the US sample, although it is observed that US-listed shares in Sigma-Aldrich Corporation did fall 5% on November 8 (the event date) but recovered this loss by November 21 (Day +8). Including Sigma-Aldrich in the US sample does not materially affect the US results which become slightly negative (the average abnormal return for November 8 becoming -0.81%) but remain insignificant.

In the case of WorldCom, there was a small but measurable effect on Andersen-audited companies in all three countries. This cross-border effect could have at least three explanations as follows.

- (i) There may have been a **loss of confidence in the level of assurance** provided by an Andersen audit (Beatty 1989, Simunic and Stein 1987, Asthana *et al.* 2003) causing an increased risk that the actual earnings of these companies were lower than the published figures. This would only occur if investors believed that the underlying character of the audit firm was the same throughout the world. If this was assumed to be the case, investors would be likely to have lost confidence in the culture of the firm, its recruitment strategy, its working practices and its judgment on questions of what constituted a material misstatement which is required to be either corrected or reported to the markets by way of a qualified opinion.
- (ii) There may also have been a **loss of confidence in the auditor's ability to pay compensation** to injured parties in the event of a further audit failure. The additional insurance offered by the deep pockets of auditors and their insurers is generally acknowledged as part of the value of an audit report from the investor's point of view (Dye 1993, Asthana *et al.* 2003). If, however, an audit firm is perceived to be facing an excessive number of claims for compensation, it may be felt that the partners personally will no longer be able to pay all of the sums due, that the total claims on their professional indemnity insurance will exceed the limits imposed in their policy and that, in addition, there is an increased risk that the terms of the insurance policy have been violated by serious professional misconduct.
- (iii) A further issue is the **costs of replacing the auditor**. In the event of Andersen ceasing to be a viable auditor as a result of bankruptcy, disqualification of its partners or loss of reputation, their audit clients would be forced to hire a new auditor to replace them. This would involve advertising costs, the cost of holding an extraordinary general meeting and the additional cost of a first year audit, during which the auditor needs extra time to become familiar with the client's business and financial systems and to create permanent audit files and systems notes. In addition to the visible cost of the

auditor's time, a first year audit will also place greater burdens on client staffs that will be required to answer more questions and provide more documentation than in subsequent years.

The other key observation is that the WorldCom scandal appears to have had a more negative effect on Andersen auditees' shares than Enron. The effects were still small but they were consistent across all three markets. This may be explained by the number of accounting scandals in which Andersen were embroiled at this time, by the lesser complexity of the accounting misstatements at WorldCom or by the sheer scale of the accounting errors. Nevertheless, it must be emphasized that the effects are small.

This leads us to draw two conclusions. Firstly, that accounting scandals have only a limited impact on investors' perceptions of other companies with the same auditor at a national or an international level. Secondly any sustained impact is magnified in proportion to the scale of the accounting corrections announced and in proportion to the number of preceding audit failures involving the same firm, explaining the more significant and more negative effects of the WorldCom event. It is also tentatively suggested that shares in companies which are heavily dependent on intellectual property are more vulnerable to bad news affecting auditors because market perceptions of these companies are more sensitive to perceptions of earnings quality.

7. Conclusions

This study has examined the effects of the Enron and WorldCom accounting failures on the market returns of companies listed on the UK, US and Australian stock exchanges and audited by Arthur Andersen.

Returns on shares in Andersen-audited companies were modestly positive at the time of the Enron scandal but negative at the time of the WorldCom announcement. This suggests that the stock market does not penalize companies whose auditors have been involved in a single

audit failure where there is good evidence of a deliberate attempt by company directors to mislead the public. However, the market tends to punish companies whose auditors have been involved in a long series of audit failures and takes an especially negative view of auditors who have failed to comment on misleading accounting policies – the classic method of earnings management. There is also an apparent size effect. Despite the much greater level of publicity given to the Enron story, the scale of earnings management at WorldCom was much greater.

Our results have a number of implications for future research in this area as follows. This study has examined the effects of US accounting scandals involving a US-based auditor on the total shareholder returns of UK companies. By no means all accounting scandals involve US companies or US-based firms. There have, in the last ten years, been major accounting issues at UK financial institutions including Barings Bank and Equitable Life, both of whom were audited by firms which had largely originated in the UK. It might be predicted from the effects of the WorldCom scandal on US companies that these domestic accounting scandals would have a bigger impact on UK stock prices than overseas accounting scandals such as Enron and WorldCom and this is a hypothesis which should be examined by further research.

Auditors, especially in the UK, have increasingly sought to limit their liability to pay compensation to investors in companies which have been affected by serious accounting failures, especially by forming limited liability partnerships or by structuring themselves as a number of associated partnerships instead of as a single firm, so that not all partners are liable for the debts of the entire firm. The effects of this on investors' confidence in the extra insurance offered by the auditor require further study. In the ordinary course of events, it might be expected that limits on liabilities would reduce the perceived level of insurance offered. On the other hand, where an auditor is already facing a major compensation claim from an audit client and where some of the audit partners have little or no liability as a result of this claim, the issue is by no means as clear-cut. The effects could be positive for other

clients, who will have a better prospect of being compensated if they pursue a claim of their own. They could be in a yet better position (and the client with the existing claim in a still worse position) if audit liability is capped by statute or by contract but neither of these possibilities presently exists in the UK. Further research is therefore needed into the effects of limiting auditors' liability on companies whose auditors are already being sued by other clients.

Our research has examined the effects of accounting scandals on companies who share an auditor. However, sharing an auditor is by no means the only reason why other companies could be perceived to be at risk. In particular, an effect on companies in the same industry would be expected. WorldCom's accounting problems could easily have contributed to a negative perception of telecommunications stocks at a time when many were already suffering from the fallout from the collapse of the internet bubble. The collapse of two such major technology companies would also be likely to raise fears of heavy losses for other companies in the same industry who might be among their customers and suppliers might be partly dependent on their relationship with these businesses and might already be creditors and potentially faced with non-payment of debts or non-delivery of services. Further research might reveal whether these scandals did have a serious impact on returns on other utility or telecom stocks.

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Table 1. Sample of US, UK and Australian companies audited by Arthur Andersen

Company	Industry
I: US	
Abbot Laboratories	Pharmaceuticals
Autonation	Car Dealership
Costco	Retail
Hershey's	Confectionery
Hurrah's Entertainment	Leisure
Northern Trust	Finance
Prologis	Commercial Property
Simon	Commercial Property
II: UK	
Amvescap	Investment Company
British Land	Commercial Property
B Sky B	Broadcast Media
Cadbury Schweppes	Confectionery and Beverages
Canary Wharf	Commercial Property
Safeway	Retail
Shire Pharma	Pharmaceuticals
WPP	Advertising
III: Australia	
Alinta	Household Gas
CSL	Pharmaceuticals
Futuris	Automotive and Food Processing
Harvey Norman Holdings	Homeware Retail and Commercial Property
Newcrest Mining	Mining
News Corporation B Shares	Broadcast and Printed Media
Sigma-Aldrich	Pharmaceuticals
Tabcorp	Gambling and Entertainment

Table 2. US Abnormal Returns around the two Events: Enron and WorldCom

Abnormal returns (in %) and cumulative returns (in %) around the announcement date of Enron and WorldCom accounting scandals are obtained based on the OLS market model regression. Test statistics are the t-test adjusted for cross-sectional correlation as proposed by Brown and Warner (1985), denoted t-(BW). Significance levels are marked as: ***=1%, **=5% and *=10%.

I. Event Period Daily Abnormal Returns

DAY	Enron	t-(BW)	WorldCom	t-(BW)
10	0.13%	0.16	-1.60%	-2.62**
9	-0.21%	-0.27	0.20%	0.33
8	-0.34%	-0.42	-0.22%	-0.36
7	-0.31%	-0.38	0.09%	0.15
6	-0.29%	-0.35	0.56%	0.92
5	0.08%	0.10	-1.11%	-1.82
4	0.70%	0.86	-1.33%	-2.18*
3	0.17%	0.21	0.16%	0.25
2	-0.24%	-0.30	-0.62%	-1.02
1	-0.15%	-0.18	0.66%	1.09
0	0.08%	0.09	-0.75%	-1.23
-1	-0.23%	-0.28	0.14%	0.24
-2	1.30%	1.60	-0.62%	-1.01
-3	0.49%	0.61	0.14%	0.23
-4	0.44%	0.54	-0.26%	-0.42
-5	0.53%	0.66	0.93%	1.52
-6	0.49%	0.61	0.26%	0.43
-7	-0.02%	-0.02	0.83%	1.37
-8	-0.02%	-0.02	0.01%	0.01
-9	-0.07%	-0.09	-1.07%	-1.76
-10	-0.38%	-0.47	-1.15%	-1.89

II. Multiday Abnormal Returns

Event Window	Enron	t-(BW)	WorldCom	t-(BW)
Day -1 to Day +1	-0.3%	-0.22	0.1%	0.05
Day -2 to Day+2	0.8%	0.42	-1.2%	-0.87
Day -3 to Day+3	1.4%	0.66	-0.9%	-0.55
Day -4 to Day +4	2.6%	1.05	-2.5%	-1.35
Day -5 to Day +5	3.2%	1.18	-2.7%	-1.32
Day -6 to Day +6	3.4%	1.15	-1.8%	-0.84
Day -7 to Day +7	3.0%	0.97	-0.9%	-0.39
Day -8 to Day +8	2.7%	0.80	-1.1%	-0.45
Day -9 to Day +9	2.4%	0.68	-2.0%	-0.76
Day -10 to Day + 10	2.2%	0.58	-4.8%	-1.70

Table 3. UK Abnormal Returns around the two Events: Enron and WorldCom

Abnormal returns (in %) and cumulative returns (in %) around the announcement date of Enron and WorldCom accounting scandals are obtained based on the OLS market model regression. Test statistics are the t-test adjusted for cross-sectional correlation as proposed by Brown and Warner (1985), denoted t-(BW). Significance levels are marked as: ***=1%, **=5% and *=10%.

I. Event Period Daily Abnormal Returns

DAY	Enron	t-(BW)	WorldCom	t-(BW)
-10	3.456%	0.30	-0.367%	-0.16
-9	-2.049%	-0.18	-1.737%	-0.77
-8	1.640%	0.14	0.194%	0.09
-7	2.951%	0.25	0.231%	0.10
-6	-3.099%	-0.26	-0.696%	-0.31
-5	-0.559%	-0.05	-0.346%	-0.15
-4	5.242%	0.45	-0.349%	-0.16
-3	-0.390%	-0.03	-0.225%	-0.10
-2	-0.465%	-0.04	-0.371%	-0.17
-1	0.958%	0.08	-0.323%	-0.14
0	4.099%	0.35	-0.239%	-0.11
1	0.236%	0.02	-0.074%	-0.03
2	0.392%	0.03	0.230%	0.10
3	-1.333%	-0.11	0.334%	0.15
4	2.029%	0.17	-1.188%	-0.53
5	-2.041%	-0.17	-0.545%	-0.24
6	-1.547%	-0.13	2.196%	0.98
7	1.095%	0.09	-0.639%	-0.28
8	1.968%	0.17	0.609%	0.27
9	0.068%	0.01	-1.415%	-0.63
10	-0.924%	-0.08	0.325%	0.14

II. Multiday Abnormal Returns

Event Window	Enron	t-(BW)	WorldCom	t-(BW)
Day -1 to Day +1	5.175%	0.27	-0.727%	-0.20
Day -2 to Day+2	5.321%	0.21	-1.539%	-0.34
Day -3 to Day+3	2.683%	0.09	-0.566%	-0.11
Day -4 to Day +4	10.221%	0.30	-1.495%	-0.25
Day -5 to Day +5	6.658%	0.18	-2.282%	-0.35
Day -6 to Day +6	0.782%	0.02	-1.556%	-0.22
Day -7 to Day +7	5.206%	0.12	-1.544%	-0.21
Day -8 to Day +8	10.317%	0.21	-1.209%	-0.15
Day -9 to Day +9	7.271%	0.14	-2.304%	-0.28
Day -10 to Day + 10	10.681%	0.19	-0.241%	-0.03

Table 4. Australian Abnormal Returns around the two Events: Enron and WorldCom

Abnormal returns (in %) and cumulative returns (in %) around the announcement date of Enron and WorldCom accounting scandals are obtained based on the OLS market model regression. Test statistics are the t-test adjusted for cross-sectional correlation as proposed by Brown and Warner (1985), denoted t-(BW). Significance levels are marked as: ***=1%, **=5% and *=10%.

I. Event Period Daily Abnormal Returns

DAY	Enron	t-(BW)	WorldCom	t-(BW)
10	0.33%	0.43	-0.13%	-0.14
9	0.11%	0.14	-0.11%	-0.12
8	-0.65%	-0.84	-0.73%	-0.84
7	1.02%	1.34	-1.35%	-1.55
6	0.84%	1.10	-0.11%	-0.13
5	0.99%	1.30	0.14%	0.17
4	0.27%	0.35	0.93%	1.07
3	0.67%	0.87	-1.26%	-1.45
2	-3.01%	-3.95***	-0.49%	-0.56
1	-1.68%	-2.20*	0.80%	0.91
0	0.33%	0.43	0.26%	0.30
-1	1.15%	1.51	-0.34%	-0.38
-2	-0.45%	-0.59	-0.02%	-0.02
-3	1.91%	2.50**	-0.35%	-0.40
-4	0.54%	0.71	0.14%	0.16
-5	-0.28%	-0.37	0.68%	0.78
-6	-0.31%	-0.41	0.06%	0.07
-7	-1.32%	-1.73	0.11%	0.13
-8	0.56%	0.74	-0.09%	-0.10
-9	0.11%	0.15	-0.46%	-0.53
-10	0.34%	0.44	0.09%	0.11

II. Multiday Abnormal Returns

Event Window	Enron	t-(BW)	WorldCom	t-(BW)
Day -1 to Day +1	-0.20%	-0.15	0.72%	0.48
Day -2 to Day+2	-3.67%	-2.15*	0.21%	0.11
Day -3 to Day+3	-1.09%	-0.54	-1.40%	-0.61
Day -4 to Day +4	-0.28%	-0.12	-0.33%	-0.13
Day -5 to Day +5	0.43%	0.17	0.50%	0.17
Day -6 to Day +6	0.96%	0.35	0.45%	0.14
Day -7 to Day +7	0.67%	0.22	-0.79%	-0.23
Day -8 to Day +8	0.58%	0.19	-1.61%	-0.45
Day -9 to Day +9	0.81%	0.24	-2.18%	-0.57
Day -10 to Day + 10	1.47%	0.42	-2.21%	-0.55

Figure 1. Cumulative abnormal returns around the Enron and WorldCom events – US Andersen auditees

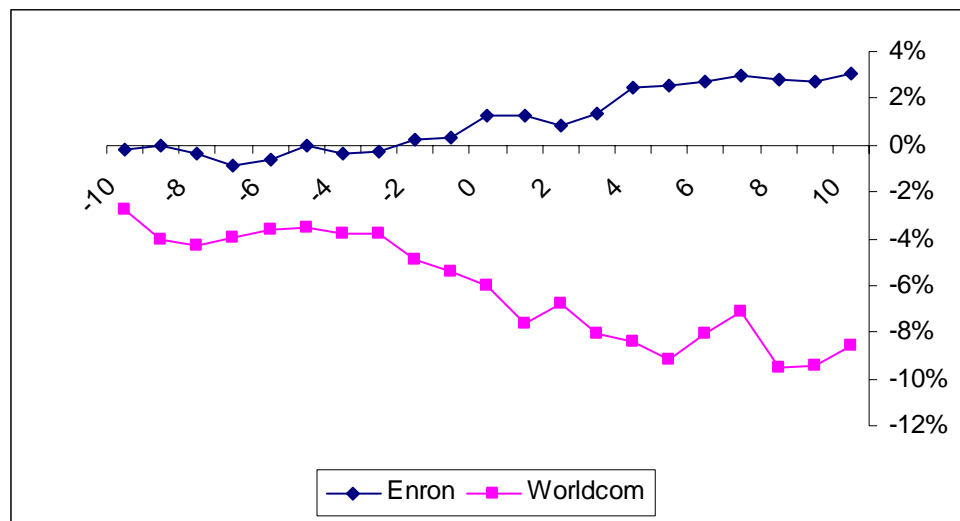


Figure 2. Cumulative abnormal returns around the Enron and WorldCom events – UK Andersen auditees

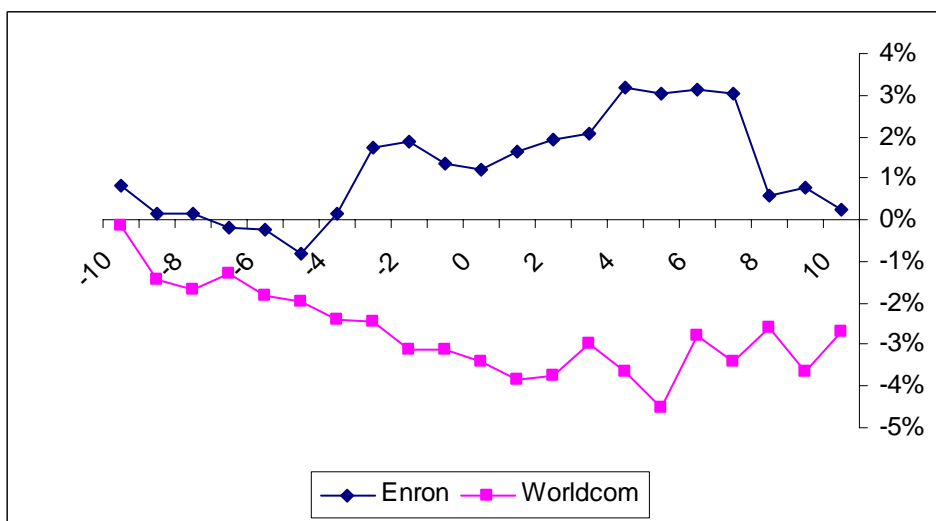
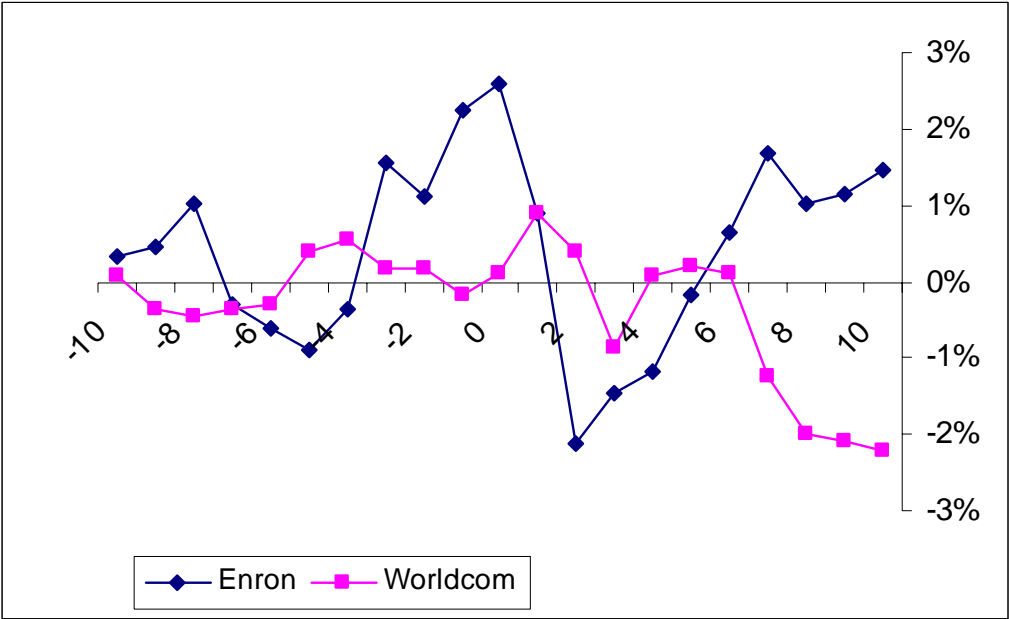


Figure 3. Cumulative abnormal returns around the Enron and WorldCom events – Australian Andersen auditees



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